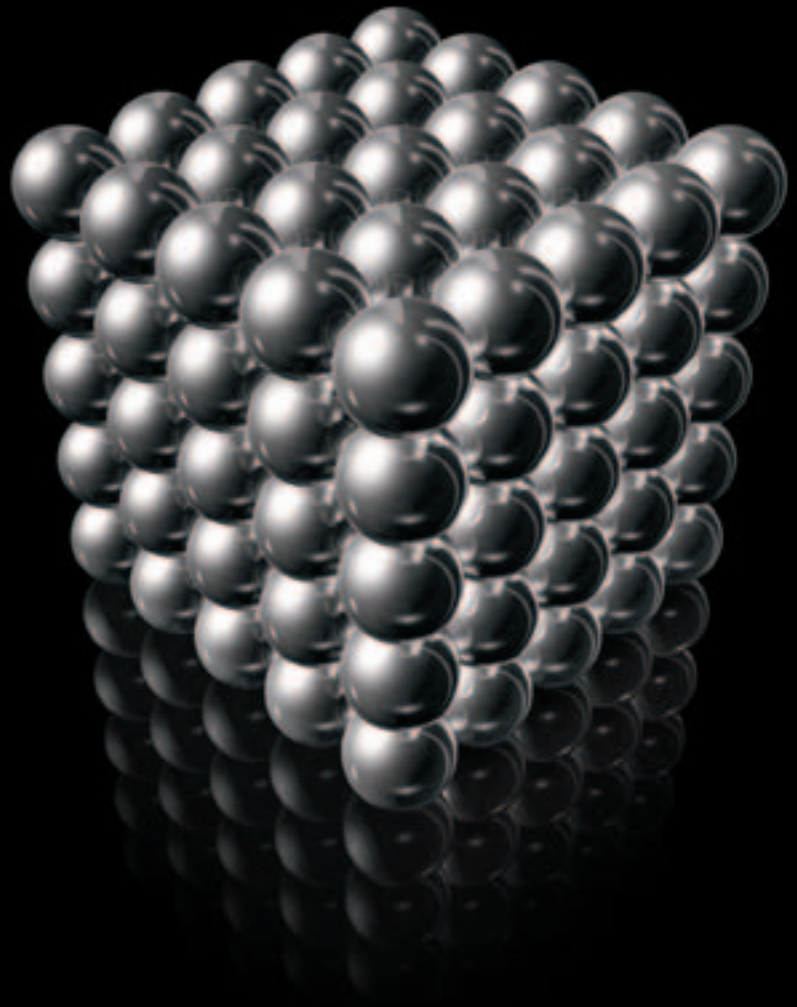
# Xsan
# Migration Guide

Includes instructions for upgrading from Xsan 1.0 to Xsan 1.1



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# Contents

# About This Guide

## This guide shows how to upgrade to Xsan 1.1.

Follow the instructions in this guide to upgrade your Xsan file system from Xsan 1.0 on Mac OS X or Mac OS X Server version 10.3 to Xsan 1.1 on Mac OS X or Mac OS X Server version 10.3.9 "Panther" or version 10.4 "Tiger."

For general information about upgrading, read Chapter 1.

For instructions about how to upgrade from Xsan 1.0 to Xsan 1.1 on Mac OS X or Mac OS X Server version 10.3, read Chapter 2.

For instructions about how to upgrade from Xsan 1.0 to Xsan 1.1 on Mac OS X or Mac OS X Server version 10.4, read Chapter 3.

## Notation Conventions

The following conventions are used in this book wherever shell commands or other command-line items are described.

| Notation | Indicates |
|---|---|
| `monospaced font` | A command or other terminal text |
| `$` | A shell prompt |
| `[text_in_brackets]` | An optional parameter |
| `(one\|other)` | Alternative parameters (type one or the other) |
| `underlined` | A parameter you must replace with a value |
| `[...]` | A parameter that may be repeated |
| `<anglebrackets>` | A displayed value that depends on your SAN configuration |

# General Information About Upgrading

# 1

This chapter contains general information that you should be aware of before you upgrade your Xsan storage area network (SAN).

## Mac OS X or Mac OS X Server?

The Xsan file system, the Xsan Admin application, and the Xsan User Quotas application run identically on Mac OS X and Mac OS X Server. Any statement in this guide about Mac OS X also applies to Mac OS X Server.

## Migrating Without Interruption

The instructions in this guide show you how to upgrade without interfering with the availability of your Xsan volumes. If you follow the instructions, clients and applications can access the SAN volumes during the upgrade.

This constant availability is based on the ability of the Xsan software to switch control of a volume from one metadata controller to another if the first becomes unresponsive. This process, called "failover," requires you to have at least two metadata controllers in your SAN.

***Note:*** Even if you have two controllers in your SAN, there will be a brief period (when the controller you are upgrading is restarting) during which your SAN has only one functioning controller. If you can't afford to risk this single point of failure even for a short time, you should temporarily add a third controller to your SAN. You can do this by temporarily promoting a suitable client computer to the role of controller. See "Promoting a Client to Standby Controller" on page 9.

### If Volume Availability During the Upgrade Is Not Important

If your SAN volumes don't need to be available during the upgrade, you can stop the volumes and then perform the upgrade as you would any software upgrade, without relying on controller failover. However, if you are upgrading to Mac OS X or Mac OS X Server v10.4, be sure that you choose to perform an update installation, not a clean installation. Otherwise, you'll lose your volume and SAN configuration files.

## About Primary and Standby Controllers

Each Xsan volume is hosted by a metadata controller, called the volume's "primary controller." To ensure availability of the volume and to protect against data loss, you usually set up at least one other computer, called a "standby controller," to act as a backup. If a volume's primary controller or the file system processes running on it become unresponsive, the standby controller takes control of the volume during controller failover.

On a controller that is hosting more than one volume, it's possible for a single volume to fail over to a standby controller while other volumes hosted by the controller continue unaffected. The volume that failed over now has a different primary controller than the other volumes. So, in a SAN with more than one volume, each volume can, through the process of failover, end up on a different primary controller.

The instructions in this guide take advantage of failover to maintain volume availability without your having to know which controller is hosting a volume. All you need to be sure of is that there is another controller ready to host volumes that are currently hosted on the controller you are upgrading.

## If You Don't Have a Standby Controller

If you have set up your SAN with a single metadata controller, you can do one of the following during the upgrade:

- Unmount and stop all of your SAN volumes for the duration of the upgrade. (The volumes will be unavailable during the upgrade.)
- Temporarily promote a client computer to the role of controller during the upgrade. (Clients will be able to use the volumes during the upgrade.)

***Note:*** You should consider permanently adding a second controller to your SAN. Losing a metadata controller without a standby can result in the loss of all data on a volume and means that your volumes are not available during controller upgrades. Including a standby controller in your SAN configuration is highly recommended.

### Promoting a Client to Standby Controller

You can temporarily change the role of a client computer so that it functions as a standby controller during the upgrade process. This will allow uninterrupted access to your SAN volumes during the upgrade.

**To promote a client to controller:**

1. In Xsan Admin, select the SAN in the SAN Components list and click Setup.
2. Select the client in the computer list and click Edit.
3. Choose Controller from the Role pop-up menu.
4. Choose a failover priority of High.
5. Click OK.

## Where to Get the Updates

There are several ways you can access the software updates mentioned in this guide.

### Xsan 1.1 Update

If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.

### Mac OS X v10.3.9 Update

If the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Mac OS X Update Combined version 10.3.9 update, and click Install.

If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.

## Version Compatibility

The following table shows which versions of Xsan and StorNext controllers and clients can be used in the same SAN.

| Controller | Client | Compatible? |
|---|---|---|
| Xsan 1.0.x or 1.1 (Mac OS X v10.3) | Xsan 1.0.x or 1.1 (Mac OS X v10.3) | Yes |
| | Xsan 1.1 (Mac OS X v10.4) | No |
| | StorNext 2.4 | Yes |
| | StorNext 2.5 | No |
| Xsan 1.1 (Mac OS X v10.4) | Xsan 1.0.x or 1.1 (Mac OS X v10.3) | Yes |
| | Xsan 1.1 (Mac OS X v10.4) | Yes |
| | StorNext 2.4 | No |
| | StorNext 2.5 | Yes |
| StorNext 2.4 | Xsan 1.0.x or 1.1 (Mac OS X v10.3) | Yes |
| | Xsan 1.1 (Mac OS X v10.4) | No |
| | StorNext 2.4 | Yes |
| | StorNext 2.5 | No |
| StorNext 2.5 | Xsan 1.0.x or 1.1 (Mac OS X v10.3) | Yes |
| | Xsan 1.1 (Mac OS X v10.4) | Yes |
| | StorNext 2.4 | Yes |
| | StorNext 2.5 | Yes |

***Important:*** If any client on your SAN is running Xsan 1.1 on Mac OS X v10.4, your controllers must all be running the same version (Xsan 1.1 on Mac OS X v10.4). You can't use a controller running Mac OS X v10.3 if any client is running Xsan 1.1 on Mac OS X v10.4.

# Upgrading to Xsan 1.1 on Mac OS X v10.3.9 "Panther"

# 2

## Follow the instructions in this chapter if you are currently using Xsan 1.0 and you want to upgrade to Xsan 1.1 on Mac OS X v10.3.9.

The following steps summarize how to move from Xsan 1.0 to Xsan 1.1 on Mac OS X v10.3:

1. Upgrade the operating system on one controller at a time to Mac OS X v10.3.9.
2. Upgrade Xsan on one controller at a time to Xsan 1.1.
3. Upgrade the Xsan Admin application on any other administrator computers.
4. (Optional) Return control of volumes to specific controllers.
5. (Optional) Upgrade client computers to Mac OS X version v10.3.9 and Xsan 1.1.

> ***Warning:*** Do not make any changes to Xsan settings (using either Xsan Admin or the command-line tools) while you are upgrading your SAN controllers. If you need to make configuration changes, wait until you finish upgrading all of your controllers.

### Step 1: Upgrade SAN controllers to Mac OS X v10.3.9

Xsan 1.1 requires Mac OS X or Mac OS X Server version 10.3.9. If your SAN controllers are running earlier versions of Mac OS X, you must upgrade them to version 10.3.9 before you upgrade Xsan.

*Important:* If you want your SAN volumes to be available to clients during the upgrade, upgrade your SAN controllers one at a time so there is always a standby controller ready to take control of any volume currently hosted by the controller you are upgrading.

***Note:*** If you want, you can use the `cvadmin fail` command to force failover and then verify that it was successful before you upgrade a controller (instead of relying on failover to take place behind the scenes when you restart the computer). For more information, see the `cvadmin` man page.

**To upgrade your controllers to Mac OS X v10.3.9:**

1. Run the update installer on a controller computer.

   If the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Mac OS X Update Combined version 10.3.9 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
2. Restart the controller computer when prompted.
3. Repeat steps 1 and 2 for each controller in your SAN.

### Step 2: Upgrade controllers to Xsan 1.1

Now that all controllers are running Mac OS X v10.3.9, you can upgrade the Xsan software to Xsan 1.1.

*Important:* If you want your SAN volumes to be available to clients during the upgrade, upgrade the controllers one at a time so that there is always a standby controller to assume control of any volume currently hosted by the controller you are upgrading.

**To upgrade Xsan on the controllers:**

1. Upgrade one controller to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.

2. Restart the controller when prompted by the installer.

   Any volume currently hosted by the controller fails over to a standby controller.

3. Repeat steps 1 and 2 for each additional controller in your SAN.

### Step 3: Upgrade the Xsan Admin application on administrator computers

If you run the Xsan Admin application on other computers to make it easier to manage the SAN, upgrade the application on those computers to version 1.1.

***Note:*** You can run version 1.1 of the Xsan Admin application on any computer with Mac OS X or Mac OS X Server v10.3 or later installed.

**To upgrade the Xsan Admin application:**

- Insert the Xsan 1.1 installation disc in the administrator computer, open the Admin Tools folder, and double-click XsanAdmin.pkg.

### Step 4: (Optional) Return control of volumes to a specific controller

When you restart a controller during the upgrade process, control of the volumes the controller is hosting switches to a standby controller. After you finish upgrading, you can use the `cvadmin` utility to return control of a volume to a specific controller.

**To switch control of a volume to the other controller:**

- Go to a controller, open Terminal, and type:

```
$ sudo cvadmin -e "fail volume"
```

where `volume` is the name of the Xsan volume.

**To see which controller is hosting a volume:**

- Open Xsan Admin, select the volume in the SAN Components list, click Overview. The name of the volume's controller is to the right of "Hosted by." You can also find out which controller is hosting a volume using the `cvadmin` command in Terminal. Open Terminal on a controller and type:

```
$ sudo cvadmin -e select
```

**If you have more than two controllers:**

You can't directly specify the controller that a volume switches to during failover. Xsan chooses a standby controller based on its failover priority (in the computer settings) and other factors. If you have only two controllers, you know the volume will switch from one to the other, but if you have three or more controllers it can be more difficult to know which standby controller will assume control. To be sure that a volume switches to a specific controller, you can temporarily change the role of the third or any additional controllers to Client during the failover.

### Step 5: (Optional) Upgrade client computers

Clients running Xsan 1.0 can use volumes hosted by controllers running Xsan 1.1. on Mac OS X v10.3.9, so you don't have to upgrade your clients. However, upgrading the client computers in your SAN is highly recommended.

***Note:*** You won't be able to change the role of a client computer to controller until you upgrade the client to Xsan 1.1 on Mac OS X v10.3.9.

**To upgrade client computers to Xsan 1.1 on Mac OS X v10.3.9:**

1. Run the Mac OS X update installer on the client computer.

   If the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Mac OS X Update Combined version 10.3.9, and click Install.

   If the client is on a private network, you can use a computer that is connected to the Internet to download the update installer from www.apple.com/support/downloads, transfer the installer to the client computer, and run it.

2. Restart the client computer when prompted.

3. Upgrade the client to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the client computer, and run it.

4. Restart the client when prompted by the installer.

5. Repeat steps 1 through 4 for each client in your SAN.

# Upgrading to Xsan 1.1 on Mac OS X v10.4 "Tiger"

# 3

Follow the instructions in this chapter if you are currently using Xsan 1.0 and you want to upgrade to Xsan 1.1 on Mac OS X or Mac OS X Server v10.4.

## Why You Must First Upgrade to Xsan 1.1 on Mac OS X v10.3.9

Your Xsan volumes remain available to clients during the upgrade if you have at least one standby controller. During the upgrade, Xsan switches control of volumes from the controller you're upgrading to a standby controller. This change of control, called "failover," takes place automatically when the controller that is hosting a volume is not responding, as it is when you restart it during software installation.

However, a controller running Xsan 1.0 on Mac OS X v10.3 can't fail over directly to a controller running Xsan 1.1 on Mac OS X v10.4.

Therefore, to make sure your Xsan volumes are available to users throughout the upgrade process, you start by upgrading your controllers to Xsan 1.1 on Mac OS X v10.3.9. Then, when you upgrade these controllers to Mac OS X v10.4.1 or later, failover can take place as needed.

***Important:*** If you upgrade the standby controllers directly to Mac O X v10.4, failover can't take place until the primary controller is also upgraded, and your volumes will be unavailable until you finish upgrading the primary controller to Xsan 1.1 on Mac OS X v10.4.1 or later.

## Why You Must Update to Xsan 1.1 Twice

Xsan 1.1 on Mac OS X v10.3 is not the same software as Xsan 1.1 on Mac OS X v10.4. So, you need to upgrade once when your controllers are running Mac OS X v10.3.9 and a second time after upgrading to Mac OS X v10.4.1 (or later) to get all the capabilities of Xsan on "Tiger."

The following steps summarize how to move from Xsan 1.0 on Mac OS X v10.3 to Xsan 1.1 on Mac OS X v10.4:

1. Unmount volumes from controllers.
2. Upgrade all controllers to Mac OS X v10.3.9.
3. Upgrade all controllers to Xsan 1.1 on Mac OS X v10.3.9.
4. Upgrade standby controllers to Mac OS X v10.4.1 or later and Xsan 1.1.
5. Upgrade the primary controller to Mac OS X v10.4.1 or later and Xsan 1.1.
6. Upgrade the Xsan Admin application on any other administrator computers.
7. (Optional) Fail over to the original primary controller.
8. (Optional) Upgrade client computers.
9. (Optional) Remount volumes on controllers.

> ***Warning:*** Do not make any changes to Xsan settings (using either Xsan Admin or the command-line tools) while you are upgrading your SAN controllers. If you need to make configuration changes, wait until you finish upgrading all of your controllers.

### Step 1: Unmount volumes from all controllers

To avoid difficulties mounting volumes on controllers after upgrading, unmount Xsan volumes from the controllers before you upgrade.

***Note:*** Unmounting volumes from the controllers does not affect availability for clients.

**To unmount a volume:**

- In Xsan Admin, select the volume in the SAN Components list and click Clients. Then select a controller and click Unmount.

### Step 2: Upgrade all controllers to Mac OS X v10.3.9

Because Xsan 1.0 controllers can't switch control of volumes directly to Xsan 1.1 controllers that are running Mac OS X v10.4, you must first upgrade your controllers to Xsan 1.1 on Mac OS X v10.3.9 so that failover can take place and your volumes will be available during the upgrade.

***Note:*** If your volumes don't need to be available during the upgrade, you don't have to ensure failover compatibility and can skip to "Upgrade standby controllers to Mac OS X v10.4.1 and Xsan 1.1" on page 21.

*Important:* If you want your SAN volumes to be available to clients during the upgrade, upgrade your controllers one at a time so there is always a standby controller ready to take control of any volume currently hosted by the controller you are upgrading.

**To upgrade your controllers to Mac OS X v10.3.9:**

1. Run the update installer on a controller computer.

   If the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Mac OS X Update Combined version 10.3.9 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
2. Restart the controller computer when prompted.
3. Repeat steps 1 and 2 for each controller in your SAN.

### Step 3: Upgrade all controllers to Xsan 1.1 on Mac OS X v10.3.9

Now that the controllers are running Mac OS X v10.3.9, you can upgrade the Xsan software to Xsan 1.1.

*Important:* If you want your SAN volumes to be available to clients during the upgrade, upgrade the controllers one at a time so that there is always a standby controller to take control of any volume currently hosted by the controller you are upgrading.

**To upgrade Xsan on the controllers:**

1. Upgrade one controller to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.

2. Restart the controller when prompted by the installer.

   Any volume currently hosted by the controller fails over to a standby controller.

3. Repeat steps 1 and 2 on each controller in your SAN.

### Step 4: Upgrade standby controllers to Mac OS X v10.4.1 and Xsan 1.1

Now you can upgrade your controllers to Xsan 1.1 on Mac OS X or Mac OS X Server v10.4.1 or later.

*Important:* If you want your SAN volumes to be available to clients during the upgrade, upgrade your standby controllers one at a time so there is always a standby controller ready to take control of any volume currently hosted by the controller you are upgrading.

**To upgrade your standby controllers to Xsan 1.1 on Mac OS X v10.4.1:**

1. Insert the Mac OS X version 10.4 software installation disc in a standby controller computer and double-click the Install Mac OS X (or Mac OS X Server) icon.
2. When you reach the Select Destination pane of the installer, click Options and select Upgrade Mac OS X (or Mac OS X Server).

   *Important:* Be sure to select the upgrade installation, not the clean installation. If you perform a clean installation of the operating system, the controller will lose its copy of the Xsan configuration files.
3. Restart the controller computer when prompted by the installer.
4. Update the controller to Mac OS X v10.4.1 or later.

   Choose Software Update from the Apple menu and install the Mac OS X or Mac OS X Server v10.4.1 (or later) update.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
5. Upgrade the standby controller to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
6. Restart the controller when prompted by the installer.
7. Repeat steps 1 through 6 for each additional standby controller in your SAN.

### Step 5: Upgrade the primary controller to Mac OS X v10.4.1 and Xsan 1.1

Now that the standby controllers are running Xsan 1.1 on Mac OS X v10.4.1 or later, you can upgrade the primary controller.

**To upgrade your primary controller to Xsan 1.1 on Mac OS X v10.4.1:**

1. Insert the Mac OS X version 10.4 software installation disc in the primary controller computer and double-click the Install Mac OS X (or Mac OS X Server) icon.
2. When you reach the Select Destination pane of the installer, click Options and select Upgrade Mac OS X (or Mac OS X Server).

   *Important:* Be sure to select the upgrade installation, not the clean installation. If you perform a clean installation of the operating system, the controller will lose its copy of the Xsan configuration files.
3. Restart the controller computer when prompted by the installer.
4. Update the controller to Mac OS X v10.4.1 or later.

   Choose Software Update from the Apple menu and install the Mac OS X or Mac OS X Server v10.4.1 (or later) update.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
5. Upgrade the primary controller to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the controller is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the controller computer, and run it.
6. Restart the controller when prompted by the installer.

### Step 6: Upgrade the Xsan Admin application on administrator computers

If you run the Xsan Admin application on other computers to make it easier to manage the SAN, upgrade the application on those computers to version 1.1.

***Note:*** You can run version 1.1 of the Xsan Admin application on any computer with Mac OS X or Mac OS X Server v10.3 or later installed.

**To upgrade the Xsan Admin application:**

- Insert the Xsan 1.1 installation disc in the administrator computer, open the Admin Tools folder, and double-click XsanAdmin.pkg.

### Step 7: (Optional) Return control of volumes to a specific controller

When you restart a controller during the upgrade process, control of the volumes the controller is hosting switches to a standby controller. After you finish upgrading, you can use the `cvadmin` utility to return control of a volume to a specific controller.

**If you have more than two controllers:**

You can't directly specify the controller that a volume switches to during failover. Xsan chooses a standby controller based on its failover priority (in the computer settings) and other factors. If you have only two controllers, you know the volume will switch from one to the other, but if you have three or more controllers it can be more difficult to know which standby controller will assume control. To be sure that a volume switches to a specific controller, you can temporarily change the role of the third or any additional controllers to client during the failover.

**To switch control of a volume to the other controller:**

- Go to a controller, open Terminal, and type:

```
$ sudo cvadmin -e "fail volume"
```

where `volume` is the name of the Xsan volume.

**To see which controller is hosting a volume:**

- Open Xsan Admin, select the volume in the SAN Components list, click Overview. The name of the volume's controller is to the right of "Hosted by."

You can also find out which controller is hosting a volume using the `cvadmin` command in Terminal. Open Terminal on a controller and type:

```
$ sudo cvadmin -e select
```

### Step 8: (Optional) Upgrade client computers

Clients running Xsan 1.0 can use volumes hosted by controllers running Xsan 1.1. on Mac OS X v10.4, so you are not required to upgrade your clients. However, upgrading the client computers in your SAN is highly recommended.

***Note:*** You won't be able to change the role of a client computer to controller until you upgrade the client to Xsan 1.1 on Mac OS X v10.4.

**To upgrade client computers to Xsan 1.1 on Mac OS X v10.4:**

1. Insert the Mac OS X version 10.4 software installation disc in a client computer and double-click the Install Mac OS X (or Mac OS X Server) icon.
2. When you reach the Select Destination pane of the installer, click Options and select Upgrade Mac OS X (or Mac OS X Server).

   ***Important:*** Be sure to select the upgrade installation, not the clean installation. If you perform a clean installation of the operating system, the client will lose its copy of the Xsan configuration files.
3. Restart the client computer when prompted by the installer.
4. Update the controller to Mac OS X v10.4.1 or later.

   Choose Software Update from the Apple menu and install the Mac OS X or Mac OS X Server v10.4.1 (or later) update.

   If the client is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the client computer, and run it.
5. Upgrade the client to Xsan 1.1.

   If you have an Xsan 1.1 installation disc, insert it in the computer and double-click Install Xsan.mpkg.

   If you don't have the disc but the computer is connected to the Internet, you can open the Software Update pane of System Preferences, click Check Now, select the Xsan Update version 1.1 update, and click Install.

   If the client is on a private network, you can use a computer that is connected to the Internet to download the update from www.apple.com/support/downloads, transfer the installer to the client computer, and run it.
6. Restart the client when prompted by the installer.
7. Repeat steps 1 through 6 for each client in your SAN.

### Step 9: (Optional) Remount volumes on controllers

If you want, you can now remount Xsan volumes on your controllers.

**To mount a volume:**

- In Xsan Admin, select the volume in the SAN Components list and click Clients. Then select a controller and click Mount Read & Write or Mount Read Only.

**If you have trouble remounting volumes on controllers**

If you have trouble mounting a volume on a controller after the upgrade (if, for example, you constantly see "waiting for file system" in the Mounted For column in the Xsan Admin Clients pane), try restarting all the controllers in the SAN.